



## Fact Sheet:

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(LL 1)

### **DATA MANAGEMENT FOR THREATENED AND ENDANGERED SPECIES**

#### **The Problem**

Supporting the military mission as well as protecting endangered species is an ongoing challenge for the U.S. Army. In recent years, the Army has taken proactive measures to increase endangered species populations and habitats while at the same time maintaining its military capability. In 1987 and 1990, the U.S. Army Construction Engineering Research Laboratories (CERL) started conducting field studies on two endangered birds inhabiting Fort Hood, TX; the black-capped vireo (*Vireo atricapillus*) and golden-cheeked warbler (*Dendroica chrysoparia*). In the process data can be inconsistent, non-standardized, and can even become lost. During the field season, extensive amounts of hardcopy field data must be entered into electronic formats.

#### **The Technology**

CERL has also developed a series of software programs designed to collect specific data on specific birds. The programs collect data on bird banding, territory monitoring, point counts, parasitism, sightings/recaptures, and non-target bird species. All programs are written using a graphical user interface format emphasizing ease of use. Ease of use is very important due to the large amount of data collected and limited computer expertise of field technicians. Wherever possible, point and tap objects such as check boxes, option buttons, and scroll bars are used to minimize handwriting or typing. Related data are also grouped

together in logical sequence to facilitate data entry. Technicians also have a user's manual available containing a schematic of the data structures and a description of how all programs operate.

Data are entered in separate, defined dBASE IV databases following established protocols using predefined data field names and formats. Data can now be entered in real or near real-time. Consequently, technicians can spend more time in the field gathering additional data. More data means the Army can more efficiently prepare for military exercises, coordinate troop movements, and minimize military disturbance. By collecting data more efficiently, the Army can also continue to abide by the Endangered Species Act and better assess and report the status of endangered birds at Fort Hood.

Data accuracy is also greatly improved. Error checking routines constantly monitor the data entry process. Default values and query retrievals make data entry faster and easier for technicians. Predefined options and ranges of values cut down on erroneous input, as does the reduction of required handwriting. Data are now more available as well. When backup disks are made, there is little chance of data loss and data can be easily copied for analysis by other researchers. With established data field names and formats, analyzing data is much easier. Since data are more consistent and standardized, analysis with data from previous seasons can easily locate trends and forecast future populations.

Data manipulation and analysis, which were once performed by hand, are now implemented by macros. The macros take advantage of defined database structures and data values enabling a researcher to automatically generate appropriate statistical summaries at the click of a button. Number-crunching data by hand is no longer necessary, so more time can now be spent analyzing the results and exploring management options.

### **Benefits/Savings**

Automated data collection programs provide Army land managers with an economical method to accurately collect and analyze endangered species data.

Detailed, standardized, and easy-to-use programs save hundreds of man-hours entering data. These data entry and analysis tools provide installation managers enhanced access to important data sources and facilitates timely reporting to their command and regulatory agencies.

### **Status**

All endangered species data collection programs were tested, evaluated, and are currently being used at Fort Hood. A CERL technical report entitled Data Collection Programs in Support of Endangered Bird Management at Fort Hood TX that describes program operation, database structure, and information collected, is available.

### **Points of Contact**

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